

II. CLAIM AMENDMENTS

1. (Previously Presented) A method for positioning of a wireless communication device comprising:

storing position data of a plurality of reference points in at least one data base;

examining which of the plurality of reference points are located in the vicinity of the wireless communication device;

transmitting at least position data about more than one of the plurality of reference points located in the vicinity of the wireless communication device to the wireless communication device;

calculating a default position of the wireless communication device from a geometric midpoint of the more than one reference points located in the vicinity of the wireless communication device; and

using the default position of the wireless communication device to estimate a pseudorange between the wireless communication device and a satellite of a positioning system.

2. (Previously Presented) The method according to claim 1, further comprising:

using base stations of a mobile communication network as the plurality of reference points;

defining a cell global identity for each base station; and

separating the plurality of reference points according to cell global identity when storing the position data.

3. (Previously Presented) The method according to claim 2, further comprising establishing the at least one data base in the mobile communication network.

4. (Previously Presented) The method according to claim 2, further comprising:
 - setting up a communication connection between the wireless communication device and a certain one of the base stations of the mobile communication network.
5. (Previously Presented) The method according to claim 2, wherein the position data of the base stations is transmitted to the wireless communication device.
6. (Previously Presented) The method according to claim 2, further comprising:
 - setting up the at least one data base in a data base server; and
 - establishing a communication connection from the at least one data base to the wireless communication device to transfer the position data between the wireless communication device and the at least one data base.
7. (Previously Presented) The method according to claim 6, wherein a connection according to a WAP protocol is used as said communication connection.
8. (Previously Presented) The method according to claim 1, further comprising storing information on the position of the plurality of reference points in the wireless communication device.
9. (Previously Presented) The method according to claim 8, further comprising:
 - transmitting a cell global identity of a base station communicating with the wireless communication device to the wireless communication device;
 - determining whether any position data based on a cell global identity of a new base station are stored in the wireless communication device when the new base station communicates with the wireless communication device; and
 - sending a request from the wireless communication device for transmission of positioning data to the wireless communication device when no position data

based on the cell global identity of the new base station are stored in the wireless communication device.

10. (Currently Amended) The method according to claim 1, further comprising:

determining the position data of the plurality of reference points at least in the wireless communication device; and

transmitting the determined position data and identities of associated base stations to be stored in the at least one data base.

11. (Previously Presented) A positioning system to be used in the positioning of a wireless communication device comprising:

at least one data base for storing a plurality of reference points;

means for detecting which of the plurality of reference points is located in the vicinity of the wireless communication device;

means for transmitting position data of more than one of the plurality of reference points located in the vicinity of said wireless communication device to the wireless communication device, wherein the transmitted position data of said the more than one reference points in the vicinity of the wireless communication device is used to calculate a geometric midpoint of the more than one reference points, wherein the geometric midpoint is used as a default position of the wireless communication device; and

means for estimating a pseudorange between the wireless communication device and a satellite of a positioning system using the default position of the wireless communication device.

12. (Previously Presented) The positioning system according to claim 11, wherein base stations of a mobile communication network are arranged to be used as the plurality of reference points, a cell global identity is defined for each base station, and the plurality of

reference points are separated according to said cell global identity when storing position data of the plurality of reference points.

13. (Previously Presented) The positioning system according to claim 12, wherein the at least one data base is established in the mobile communication network.

14. (Previously Presented) The positioning system according to claim 12, comprising means for establishing a communication connection between the wireless communication device and a certain one of the base stations of the mobile communication network.

15. (Previously Presented) The positioning system according to claim 12, comprising means for transmitting position data of the base stations of the mobile communication network to the wireless communication device.

16. (Previously Presented) The positioning system according to claim 12, wherein the at least one data base is set up in a data base server, and that the positioning system comprises means for setting up a communication connection from the at least one data base to the wireless communication device to transfer position data between the wireless communication device and the data base.

17. (Previously Presented) The positioning system according to claim 16, wherein a connection according to a WAP protocol is used as said communication connection.

18. (Previously Presented) The positioning system according to claim 11, wherein information on the position of the plurality of reference points is stored in the wireless communication device.

19. (Previously Presented) The positioning system according to claim 18, comprising means for transmitting to the wireless communication device a cell global identity of a base station with which the wireless communication device is communicating;

the wireless communication device comprising means for determining whether position data based on a cell global identity of a new base station is stored in the wireless communication device when the new base station communicates with the wireless

communication device, wherein a request to transmit position data to the wireless communication device is arranged to be transmitted from the wireless communication device when no position data based on a cell global identity of the new base station is stored in the wireless communication device.

20. (Previously Presented) The positioning system according to claim 11, wherein the wireless communication device comprises:

means for determining position data for the plurality of reference points; and

means for transmitting the determined position data and a cell global identities of base stations associated with the plurality of reference points,

wherein the positioning system comprises means for receiving and storing said determined position data and cell global identities into the data base.

21. (Previously Presented) An electronic device to be used in a positioning system comprising at least:

positioning means;

means for performing functions of a mobile communication device;

means for detecting which of a plurality of reference points stored in a data base of the positioning system is located in a vicinity of the electronic device;

means for receiving position data of more than one reference points of the plurality of reference points located in the vicinity of the wireless communication device;

means for using the received position data of the more than reference points located in the vicinity of said wireless communication device to calculate a geometric midpoint of the more than one reference points, wherein the geometric midpoint is used as a default position of the wireless communication device; and

means for using the default position of the wireless communication device to estimate a pseudorange between the wireless communication device and a satellite of a positioning system.

22. (Previously Presented) The method of claim 1, wherein the determination of the pseudorange between the wireless communication device and a satellite of the positioning system comprises one of:

- a code phase;
- a bit phase;
- a subframe phase; or
- a frame phase.

23. (Cancelled)

24. (Previously Presented) The method of claim 1, further comprising calculating the default position of the wireless communication device from the more than one reference points located in the vicinity of the wireless communication device and a direction of movement of the wireless communication device.

25. (Previously Presented) The method of claim 2, further comprising determining the position data of the more than one reference points from antenna directional patterns of the associated base stations.

26. (New) A method comprising:

- storing position data of a plurality of reference points in at least one data base;
- examining which of the plurality of reference points are located in the vicinity of a positioning module;
- transmitting at least position data about more than one of the plurality of reference points located in the vicinity of the positioning module to the positioning module;

calculating a default position of the positioning module from a geometric midpoint of the more than one reference points located in the vicinity of the positioning module; and

using the default position of the positioning module to estimate a pseudorange between the positioning module and a satellite of a positioning system.

27. (New) The method of claim 26, wherein the determination of the pseudorange between the wireless communication device and a satellite of the positioning system comprises one of:

a code phase;

a bit phase;

a subframe phase; or

a frame phase.

28. (New) The method of claim 26, further comprising calculating the default position of the wireless communication device from the more than one reference points located in the vicinity of the wireless communication device and a direction of movement of the wireless communication device.

29. (New) The method according to claim 26, further comprising:

using base stations of a mobile communication network as the plurality of reference points;

defining a cell global identity for each base station; and

separating the plurality of reference points according to cell global identity when storing the position data.

30. (New) The method of claim 29, further comprising determining the position data of the more than one reference points from antenna directional patterns of the associated base stations.
31. (New) The method according to claim 29, further comprising establishing the at least one data base in the mobile communication network.
32. (New) The method according to claim 29, further comprising:
 - setting up a communication connection between the positioning module and a certain one of the base stations of the mobile communication network.
33. (New) The method according to claim 29, wherein the position data of the base stations is transmitted to the positioning module.
34. (New) The method according to claim 29, further comprising:
 - setting up the at least one data base in a data base server; and
 - establishing a communication connection from the at least one data base to the positioning module to transfer the position data between the positioning module and the at least one data base.
35. (New) The method according to claim 34, wherein a connection according to a WAP protocol is used as said communication connection.
36. (New) The method according to claim 26, further comprising storing information on the position of the plurality of reference points in positioning module.
37. (New) The method according to claim 36, further comprising:
 - transmitting a cell global identity of a base station communicating with the positioning module to the positioning module;

determining whether any position data based on a cell global identity of a new base station are stored in the positioning module when the new base station communicates with the positioning module; and

sending a request from the positioning module for transmission of positioning data to the positioning module when no position data based on the cell global identity of the new base station are stored in the positioning module.

38. (New) The method according to claim 26, further comprising:

determining the position data of the plurality of reference points at least in the positioning module; and

transmitting the determined position data and identities of associated base stations to be stored in the at least one data base.

39. (New) A system comprising:

at least one data base configured to store a plurality of reference points;

a positioning module configured to detect which of the plurality of reference points is located in the vicinity of the positioning module;

a communication network configured to transmit position data of more than one of the plurality of reference points located in the vicinity of the positioning module to the positioning module, wherein the transmitted position data of the more than one reference points in the vicinity of the position module is used to calculate a geometric midpoint of the more than one reference points, wherein the geometric midpoint is used as a default position of the position module; and

a processor configured to estimate a pseudorange between the positioning module and a satellite of a positioning system using the default position of the positioning module.

40. (New) The system according to claim 39, wherein base stations of a mobile communication network are arranged to be used as the plurality of reference points, a cell global identity is defined for each base station, and the plurality of reference points are separated according to said cell global identity when storing position data of the plurality of reference points.

41. (New) The system according to claim 40, wherein the at least one data base is established in the communication network.

42. (New) The system according to claim 40, comprising a wireless communication device configured to establish a communication connection between the positioning module and a certain one of the base stations of the communication network.

43. (New) The system according to claim 40, comprising means for transmitting position data of the base stations of the mobile communication network to the positioning module.

44. (New) The system according to claim 40, wherein the at least one data base is set up in a data base server, and that the system comprises a wireless communication device configured to set up a communication connection from the at least one data base to the positioning module to transfer position data between the positioning module and the data base.

45. (New) The system according to claim 44, wherein a connection according to a WAP protocol is used as said communication connection.

46. (New) The system according to claim 39, wherein information on the position of the plurality of reference points is stored in the positioning module.

47. (New) The system according to claim 46, wherein the communication network is configured to transmit to the positioning module a cell global identity of a base station with which the positioning module is communicating;

the positioning module comprising a processor configured to determine whether position data based on a cell global identity of a new base station is stored in the positioning module when the new base station communicates with the positioning module, wherein a

request to transmit position data to the positioning module is arranged to be transmitted from the positioning module when no position data based on a cell global identity of the new base station is stored in the positioning module.

48. (New) The system according to claim 39, wherein the positioning module comprises:

a control block configured to determine position data for the plurality of reference points; and

a transmitter configured to transmit the determined position data and a cell global identities of base stations associated with the plurality of reference points,

wherein the system comprises for a switching center configured to receive and store said determined position data and cell global identities into the data base.

49. (New) An apparatus comprising:

a positioning module configured to

detect which of a plurality of reference points stored in a data base of a positioning system is located in a vicinity of the apparatus;

receive position data of more than one reference points of the plurality of reference points located in the vicinity of the apparatus;

calculate a geometric midpoint of the more than one reference points using the received position data of the more than reference points located in the vicinity of the apparatus, wherein the geometric midpoint is used as a default position of the apparatus; and

estimate a pseudorange between the wireless communication device and a satellite of a positioning system using the default position of the apparatus.